

REMARKS

This Amendment is filed in response to the Office Action mailed on June 13, 2006. All objections and rejections are respectfully traversed.

Claims 1-43 are currently pending.

Claims 42-43 are added to better claim the invention.

Request For Interview

The Applicant respectfully requests a telephonic interview with the Examiner at such time as is convenient for the Examiner, but prior to the issue of the next Office Action. The Applicant believes such contact may more efficiently advance the prosecution of the case. The Applicant's attorney may be contacted at 617-951-2500.

Claim Objections

At paragraph 2 of the Office Action, the Examiner stated claims 6-8 would be allowable if rewritten in independent form. Claim 6 is amended into independent form. Therefore claims 6-8 are believed to be in condition for allowance.

Claim Rejections – 35 USC § 112

At paragraph 3-4 of the Office Action, claims 34-36 were rejected under 35 U.S.C. §112, second paragraph as being indefinite. Specifically, claims 34-36 use the

term “substantially.” Applicant has amended claims 34-36, and therefore the rejection is moot. Accordingly, claims 34-36 are believed allowable over the §112 rejection.

Claim Rejections – 35 USC § 102

At paragraphs 5-13, claims 1, 9-11, 16, 30 and 32 are rejected under 35 U.S.C. §102 as being anticipated by Mankude et al., US Patent No. 6,795,866, issued Sept . 21, 2004, hereinafter Mankude

The present invention, as set forth in representative claim 1, comprises in part:

1. A method for uniformly distributing data transmitted by a server over a plurality of underlying links of an aggregate within a computer network, the method comprising the steps of:

defining a unit of data as a datagram;
apportioning each datagram into at least one fragment at the server;
associating each fragment to an underlying link of the aggregate on the basis of an Internet protocol (IP) identifier (ID) of each datagram and a number of active links of the aggregate; and
transmitting the fragment over its associated underlying link from the server to the computer network to transmit fragments of the datagram over the same associated underlying link.

By way of background, Mankunde discloses using an intermediary server to receive fragments and check that a first fragment is received. If the first fragment is not initially received at the intermediary server, then the received fragment is placed in a buffer (packet fragment data structure) on the intermediary server and waits for the first fragment to be received. Once the first fragment is received at the intermediary server,

the packet identifier is read for the destination node and forwarded to the destination server. Then, the already received fragments are forwarded to the destination server.

Applicant respectfully urges that Mankunde does not teach or suggest Applicant's claimed novel step of *associating each fragment to an underlying link of the aggregate on the basis of an Internet protocol (IP) identifier (ID) of each datagram and a number of active links of the aggregate and transmitting the fragment over its associated underlying link from the server to the computer network to transmit fragments of the datagram over the same associated underlying link*. In further detail, an *aggregate* as stated in Applicant's claimed invention is a group of physical interfaces and their links, and is also called a virtual interface. (Specification page 1, line 22-25). Each physical interface or *underlying link* responds to at least one IP address and to at least one common MAC address. Applicant's invention associates an *IP identifier* with one physical interface or *underlying link* for each *datagram*, where each fragment of a particular datagram has the same IP identifier. Additionally, other datagrams with different IP identifiers can be assigned to other physical interfaces of the aggregate to allow for a round robin like load balancing.

In contrast, Mankunde uses an intermediary server to determine if the first fragment is sent or not and what the destination address. In other words, the intermediary server is processing the fragments to make sure the fragments are sent in the proper order. Applicant notes that this is a problem that Applicant's invention fixes, which is stated on Specification, page 4, lines 9-25. Applicant's invention allows for packets to be sent in order through one *underlying link* of an *aggregate* and other datagrams to be sent

through other underlying links of the aggregate for load-balancing. An IP identifier assigned to one or more fragments of a datagram allow a single underlying link to transmits the fragments of the datagram in purpose without wasting processing and memory resources for re-ordering the fragments at the destination or intermediary server.

Additionally, Mankude does not disclose assigning packets or datagrams to links using an IP identifier as claimed by Applicant. In contrast, in Mankude, the interface (intermediate) server receives the fragments of the packet and selects the appropriate private interface based on the destination IP address of the fragment which is only stored in the first fragment. (see Mankude, Col. 4, lines 10-20). Applicant's invention uses an *IP identifier*, which is different from a destination IP address. An IP identifier is generally "a 16-bit value" stored in another field of the IP header. The IP ID is generally unique for each datagram, and typically is used in reassembly of datagram fragments by matching same IP IDs. In contrast, a destination IP Address is a 32-bit value stored in a specific field of the IP address header that indicates an intended recipient for the datagram (for example, the 32-bit IP address 128.154.083.245 may be a destination IP address).

Accordingly, Applicant respectfully urges that Mankude is legally insufficient to anticipate the present claims under 35 U.S.C. §102 because of the absence of the Applicant's claimed novel *associating each fragment to an underlying link of the aggregate on the basis of an Internet protocol (IP) identifier (ID) of each datagram and a number of active links of the aggregate and transmitting the fragment over its associated under-*

lying link from the server to the computer network to transmit fragments of the datagram over the same associated underlying link.

Claim Rejections – 35 USC § 103

At paragraphs 26-35, claims 21, 22, 27-29, 31, 33-37 were rejected under 35 U.S.C. §103 as being unpatentable over Makude, in view of McCullough et al., US Patent Application No. 2002/0010866, hereinafter McCullough.

The present invention, as set forth in representative claim 21, comprises in part:

21. A method for distributing data over a plurality of network links within a computer network, comprising the steps of:

defining a unit of data as a datagram;
apportioning each datagram into at least one fragment;

associating each datagram to a network link of the plurality of network links according to a round robin policy based at least in part on an Internet protocol (IP) identifier (ID) of each datagram;

transmitting the fragments of the datagram over the datagram's associated network link.

By way of background, McCullough discloses an apparatus for increasing peer-to-peer bandwidth between remote networks. Between a responder and an initiator a unified channel is provided. The unified channel may have a group of inferior tunnels to transport fragments. (paragraph 0055). The fragments are spread equally across all the inferior tunnels, which causes fragments to be received out of order. The fragments are reassembled using the IP header. (paragraphs 0057-0058). Additionally, the fragments

may be sent across the links in a round-robin fashion to interleave small and large transfers.

Applicant respectfully urges that Mankude and McCullough, taken alone or in combination, do not teach or suggest Applicant's claimed novel *associating each datagram to a network link of the plurality of network links according to a round robin policy based at least in part on an Internet protocol (IP) identifier (ID) of each datagram*. In further detail, Applicant's invention uses an *IP identifier* assigned to each *datagram*, where each link of the plurality of network links reads one IP identifier at a time. Therefore, the plurality of links send multiple datagrams at one time by going through a round robin of the plurality of links. Additionally, because each link sends the fragments of the datagram in order, the fragments are delivered in order.

In contrast, Mankude and McCullough teach away from Applicant's claimed invention because both Mankude and McCullough teach of reassembling the messages that are received out-of-order. (McCullough paragraph 0058, Mankude Col. 2, lines 21-27). In contrast, an advantage and goal of Applicant's invention is to send the packet in order to not waste processing and memory resources when reassembling the packet.

Additionally, Mankude does not disclose nor teach of *associating each datagram to a network link* by assigning an IP identifier to the one or more fragments of a datagram and to the network link, as claimed by Applicant. Mankude assigns a packet identifier which identifies which fragment the packet is a portion of, but uses a destination IP address to assign the packets to a particular link. Mankude is silent about assigning IP

identifiers to fragment and to links (or network interfaces). Furthermore, McCullough does not teach or suggest assigning an IP identifier to a link and fragments of a datagram, as claimed by Applicant.

Accordingly, Applicant respectfully urges that the Mankude patent, and the McCullough patent, either taken singly or taken in combination are legally insufficient to render the presently claimed invention obvious under 35 U.S.C. § 103 because of the absence in each of the cited patents of Applicant's claimed novel *associating each datagram to a network link of the plurality of network links according to a round robin policy based at least in part on an Internet protocol (IP) identifier (ID) of each datagram*

At paragraph 14-19, claims 2, 3, 12, 13, 17, and 18 were rejected under 35 U.S.C. §103 as being unpatentable over Makude, in view of Westberg, US Patent No. 6,791,982, hereinafter Westberg.

At paragraph 20-22, claims 4, 14, and 19 were rejected under 35 U.S.C. §103 as being unpatentable over Makude, in view of Narad et al., US Patent No. 6,157,955, hereinafter Narad.

At paragraphs 23-25, claims 5, 15, and 20 were rejected under 35 U.S.C. §103 as being unpatentable over Makude, in view of Narad, and in further view of Westberg.

At paragraphs 36-39, claims 23, 24, 38, and 39 were rejected under 35 U.S.C. §103 as being unpatentable over Makude, in view of McCullough, and in further view of Westberg.

At paragraphs 40-43, claims 25, 26, and 40 were rejected under 35 U.S.C. §103 as being unpatentable over Makude, in view of McCullough, and in further view of Narad.

At paragraphs 44-45, claim 41 was rejected under 35 U.S.C. §103 as being unpatentable over Makude, in view of McCullough, and in further view of Narad and Westburg.

Applicant respectfully notes that claims 2-5, 12-15, 17-20, 23-26, and 38-41 are dependent claims that depend from independent claims that are believed to be in condition for allowance. Accordingly, claims 2-5, 12-15, 17-20, 23-26, and 38-41 are believed to be in condition for allowance.

All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims.

The Applicant respectfully solicits favorable action.

PATENTS
112056-0009
P01-1093

Please charge any additional fee occasioned by this paper to our Deposit Account
No. 03-1237.

Respectfully submitted,



Shannen C. Delaney
Reg. No. 51,605
CESARI AND MCKENNA, LLP
88 Black Falcon Avenue
Boston, MA 02210-2414
(617) 951-2500